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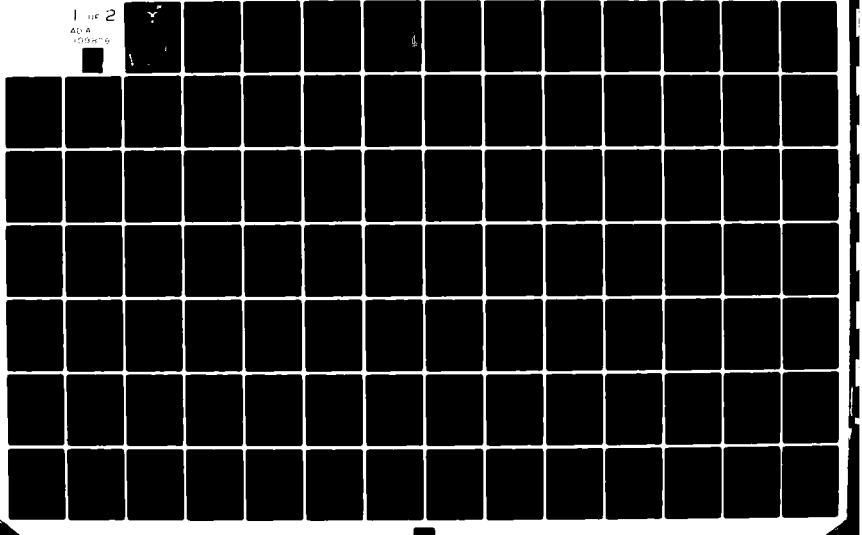

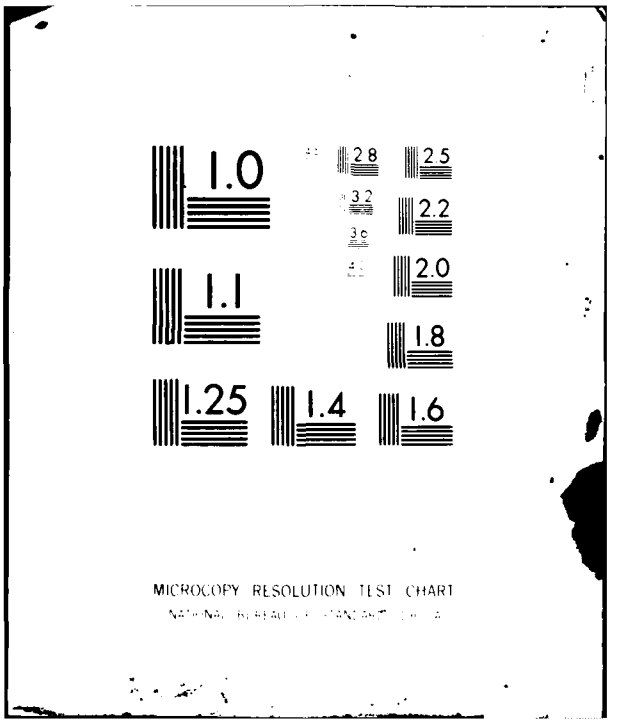
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PERCEIVED UTILITY OF THE
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Ernest E. Speck, Jr., 1st Lt, USAF

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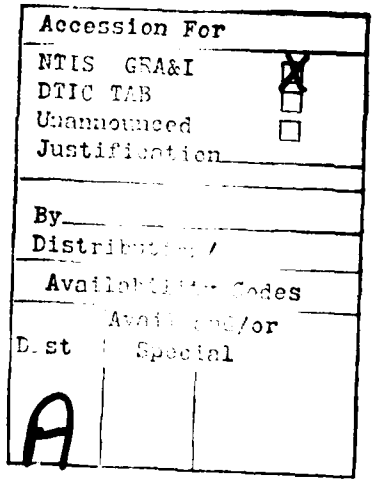

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AFIT has the responsibility for providing for the education of Air Force officers. As part of this responsibility, AFIT needs feedback from past graduates to evaluate the programs offered. This study evaluated the utility of the Graduate Systems Management program through the eyes of its past graduates. A survey was taken of Air Force officers who graduated in the classes of 1969 through 1978 with about 82% (148) of the graduates participating. In the survey, the program was described in terms of eleven specific subject areas and the graduates responded to statements for each area concerning the need for the material on the job, level of detail presented, need for more theoretical emphasis, and need for more practical applications emphasis. Overall, the responses indicated the program is meeting the needs of its graduates as all subject areas were needed to some degree. Also, the level of detail was generally sufficient. However, the balance between theoretical emphasis and practical applications leans too far toward theory. The respondents would prefer to see more practical applications where possible. Write-in comments indicated areas which could be included in the program with AF Procurement policies and procedures suggested most often.

LSSR 54-81

PERCEIVED UTILITY OF THE AFIT GRADUATE SYSTEMS MANAGEMENT PROGRAM

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Systems Management

By

Ernest E. Speck, Jr., BSE
First Lieutenant, USAF

September 1981

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This thesis, written by

First Lieutenant Ernest E. Speck, Jr.

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN SYSTEMS MANAGEMENT

DATE: 30 September 1981

Richard T. Taliaferro

COMMITTEE CHAIRMAN

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CHAPTER 1

RESEARCH QUESTION

Problem Statement

As the Air Force evolves as a highly technical and sophisticated organization, there is a continuing need to educate Air Force leaders in the systematic management of the resources at their disposal. A need for professional awareness that is developed through study of our changing technology and a need for a firm understanding of the principles of management are vital for the Air Force to accomplish its mission. Partially to satisfy this growing need, the Air Force Institute of Technology (AFIT) was established to provide selected individuals with graduate-level education. To this end, AFIT offers graduate degrees in many specialties, one of which is Systems Management. The Graduate Systems Management (GSM) program "has been designed to give the mature, technically-oriented officer a graduate educational program aimed at improving their skills in managing a variety of research, engineering, and development systems and related activities [5:1137]." This program must be responsive to the changing needs of the Air Force manager in the various career fields to which graduates are assigned. Although periodic program reviews indicate that the program is

achieving its objectives, to date, no study has been conducted to determine how useful the graduates think it is to them.

Objectives of the Research

The overall objective of this research was to determine if the AFIT Graduate Systems Management program is meeting the needs of Air Force managers as perceived by GSM graduates working in various Air Force agencies and career specialties. Specifically, the hypothesis to be tested was that the GSM program is properly structured to meet the needs of the graduates in a variety of career fields.

This research was limited to Air Force officers graduating in the classes of 1969 through 1978.

CHAPTER 2

BACKGROUND

AFIT History

The roots of the Air Force Institute of Technology can be traced back to 1914 when the Army assigned Captain V. E. Clark to the Massachusetts Institute of Technology (MIT) to study Aeronautical Engineering. Later, during World War I, the Army and Navy opened a school of aeronautical engineering at MIT. In 1919, Colonel Thurman H. Bane, Commanding Officer at McCook Field, in Dayton, Ohio, was credited with originating the idea of an "in-service" school. This idea was approved and, in November of that year, the Air School of Application was established at McCook Field with Colonel Bane as the Commandant (1:I-6). Following the establishment of the Air Service in 1920, the School was designated the Air Service Engineering School.

In 1926, Congress authorized the creation of the Air Corps and with it a five-year expansion program. This program required more engineering and test activities than could be accommodated at McCook Field. As a result, in 1927, these activities along with the School were moved to a tract of land donated by citizens of Dayton which was subsequently named Wright Field. The designation was in honor of Dayton's

celebrated natives, Orville and Wilbur Wright. The name of the School was also changed at this time to the Air Corps Engineering School. More important, however, was the change in the philosophy and policy which took place. Originally, the School was providing technological education for senior officers in command positions. Now, the School was also tasked to prepare young officers in the areas of research and design within the Engineering Division (1:I-6).

Shortly after the Japanese attack on Pearl Harbor in 1941, classes were suspended. To that point, the School had graduated more than 200 officers (1:I-7). In April of 1944, the School was reopened to provide for three and six-month courses to meet emergency needs (5:3).

After World War II, a survey indicated that the Army Air Force Officer Corps was generally lacking in educational attainment. A board of officers assigned to study the problem recommended that the Army Air Force establish a technological school with the Engineering School being the nucleus. Committees were then formed to develop an operating plan, and the end result was the Army Air Forces' Institute of Technology, which opened on 3 September 1946. The courses were to be patterned after those offered in leading civilian universities with changes as necessary to meet specific Air Force needs. The Institute consisted of two colleges: Engineering and Maintenance, and Logistics and Procurement. The names of the colleges were later changed to the College of Engi-

neering Sciences and the College of Industrial Administration (1:I-7).

The Air Force became an independent service in 1947, and at this time the School was designated the Air Force Institute of Technology (AFIT). That same year, the School of Civil Engineering Special Staff Officers' Course was transferred to AFIT. The responsibility for the programs offered at the civilian institutions was transferred to AFIT the following year (5:3).

Until April of 1950, the Air Material Command maintained command jurisdiction of the Institute; however, at this time, command jurisdiction was transferred to the Air University (2:I-4).

In January of 1951, eight officers were enrolled in the first advanced Engineering Management class which marked the first step toward including graduate programs at the Institute (2:I-4).

Public Law 733, Resident College of the U.S. Air Force Institute of Technology, was passed by the 83rd Congress in 1954. This law allowed AFIT to confer degrees on persons completing course requirements which were approved for accreditation by a nationally recognized accreditation association (3:7). The first degrees were conferred on the graduates of the undergraduate Aeronautical Engineering and Electrical Engineering programs on 13 March 1956 (2:I-5).

In October of 1955, an experimental six-month graduate

logistics course was initiated to provide for an education in the full spectrum of logistics. The instruction for these courses was provided by contract with Ohio State University. The logistics courses were made a permanent part of the Institute in September of 1958 as well as the establishment of the School of Logistics. As a result of making logistics a permanent part of the Institute, it was necessary to expand the contract with Ohio State University to obtain additional academic and research assistance (1:I-8).

On 2 May 1958, the graduate degree programs were accredited with the first degrees being conferred on the graduates of the Engineering Administration and the Applied-Comptrollership programs in August of that same year (1:I-8).

In February of 1963, the School of Logistics was renamed the School of Systems and Logistics and the Civil Engineering Course was renamed the Civil Engineering School (5:3).

In May of 1978, the Air University, including AFIT, became part of the largest USAF major command -- the Air Training Command.

Graduate degree programs were first offered in the Civil Engineering School in early 1979. Also at that time, the School was renamed the School of Civil Engineering (5:3).

Currently, AFIT performs two services to meet its mission of providing ". . . education and training to meet Air Force requirements in scientific, technological, managerial,

medical, and other fields as directed by Hq USAF [5:27]." First, degree level education is provided in the Resident College which consists of the School of Engineering, the School of Systems and Logistics, and the School of Civil Engineering. Second, AFIT conducts continuing education and specialized training programs which are ". . . designed primarily to satisfy specific Air Force and DOD needs for special skills of immediate applicability [5:37]."

Graduate Systems Management Program

The first Graduate Systems Management (GSM) program was offered in the 1963-1964 academic year in the School of Engineering. It was ". . . designed to prepare officers for assignment to responsible positions in System Project Offices [1:II-23]." As a result, the graduates entered an acquisition type career field, usually with a Duty Air Force Specialty Code (DAFSC) of 27XX, 28XX, or 29XX. The curriculum was designed so as to provide ". . . officers with a knowledge of the theory and practice of management as it should apply in the defense and aerospace industry environments [6:103]."

Management Theory and Techniques, Economics and Econometrics, and Systems Analysis were the three major sequences offered in this first GSM program. Also, the students were required to collect and analyze data concerning a System Project Office problem and to prepare a management consultant report on the problem (1:II-23).

In 1969, the program was restructured into four functional areas: Financial Management and Economics, Management, Operations Research, and Mathematics (see appendix A). Also at this time, "an intensive student research effort in an Air Force problem . . . [2:II-23]" was included with the findings, conclusions, and recommendations being presented in a formal thesis instead of the technical report requirement.

Since initiation of the GSM program, the core program areas have remained essentially the same with the instructors updating the material presented in individual courses to maintain currency with academic and technological changes (see appendix A for detailed curricula of the program from 1965 to 1980). In the mid 1970's, the objective of preparing officers for an assignment in a System Program Office was replaced with the idea of preparing the officer for an assignment ". . . to a variety of positions [4:38]." At this time, the GSM program was opened to officers planning to enter other than acquisition type jobs (27XX, 28XX, and 29XX DAFSCs). Those individuals entering jobs requiring a 30XX, 51XX, 65XX, C73XX, 80XX or 81XX DAFSC were permitted entrance to the GSM program.

In 1979, the program management responsibility for the Systems Management Program was transferred from the School of Engineering to the School of Systems and Logistics where it remains today.

CHAPTER 3

PREVIOUS AFIT STUDIES

The importance of obtaining feedback from the graduates of the various AFIT programs is inherent in the basic management principle of evaluation. In the past, AFIT has conducted several studies to evaluate various aspects of the different programs. The scope of these studies ranged from high-level evaluation of many programs to very specific, low-level evaluation of individual programs. Some of the more recent studies will be reviewed in this chapter.

1975-1977 Study

In 1979, the School of Engineering conducted a survey of former AFIT graduates "to determine their opinion of the School and its usefulness to their job and career [8:28]." Questionnaires were sent to the graduates of the 1975 through 1977 classes. The survey population consisted of students from the following programs:

Astronautical Engineering	Nuclear Engineering
Aeronautical Engineering	Systems Analysis
Electrical Engineering	Systems Engineering
Engineering Physics	Systems Management
Guidance and Control	Doctoral Program [8:28].

A total of 420 graduates were surveyed and 255 (61%) returned the questionnaire. Nine questions were asked and the responses are summarized below:

1. My AFIT program directly related to this assignment.

Agree (64%) Neutral (7%) Disagree (29%)

2. My AFIT program directly related to other post-AFIT assignments (other than my present job).

Agree (63%) Neutral (11%) Disagree (26%)

3. AFIT courses portrayed the current state of the art when I took them.

Agree (82%) Neutral (10%) Disagree (8%)

4. Program Length

Too Long (14%) About Right (77%) Too Short (9%)

5. Overall, how do you rate the quality of instruction you received in your AFIT program?

Excellent or Good (86%) Fair (11%) Poor to Very Poor (3%)

6. Graduation from AFIT increased my promotability.

Agree (65%) Neutral (17%) Disagree (18%)

7. Workload while in school.

Too Much (38%) About Right (62%) Too Light (0%)

8. While in school did you receive adequate guidance concerning your program?

Yes (67%) No (28%) Not Sure (5%)

9. I would recommend AFIT School of Engineering to other Air Force officers.

Yes (74%) No (14%) Not Sure (12%)

Although this study dealt with the total spectrum of programs offered and not any one particular program at the School of Engineering, it did demonstrate an interest in the utility of the programs to the graduates working in various career fields.

1978 Study

In 1980, this same questionnaire was administered to the 1978 graduates of the ten programs identified above (9:38). A total of 228 graduates were surveyed and 183 (80%) returned the questionnaire. The summary of the responses to the nine questions is given below:

1. My AFIT program directly related to this assignment.

   Agree (72%) Neutral (5%) Disagree (23%)

2. My AFIT program directly related to other post-AFIT assignments (other than my present job).

   Agree (74%) Neutral (13%) Disagree (13%)

3. AFIT courses portrayed the current state of the art.

   Agree (85%) Neutral (10%) Disagree (5%)

4. Program Length

   Too Long (9%) About Right (82%) Too Short (9%)

5. Overall, how do you rate the quality of instruction you received in your AFIT program?

   Excellent or Good (90%) Fair (9%) Poor to Very Poor (1%)

6. Graduation from AFIT increases my promotability.

   Agree (67%) Neutral (26%) Disagree (7%)

7. Workload while in school.

   Too Much (25%) About Right (73%) Too Light (2%)

8. While in school did you receive adequate guidance concerning your program?

   Yes (66%) No (24%) Not Sure (10%)

9. I would recommend the AFIT School of Engineering to other interested Air Force officers.

Yes (83%) No (8%) Not Sure (9%)

The faculty of the school was pleased with the results of this follow-on survey citing a "significant overall improvement in the graduate survey results with 84% (sic) of the graduating classes in 1978 willing to recommend the AFIT School of Engineering to other Air Force officers [9:39]."

These two studies provided the faculty with an overall evaluation of the School but were not useful in evaluating the programs individually. No means of differentiating the responses by program attended was available.

1979 Study

Also in 1980, the Operational Sciences Department of the School of Engineering administered a survey to the 1979 graduates of the newly formed Strategic and Tactical Science (GST) program. "The purpose of this program is to educate Air Force officers in the area of strategic and tactical planning [10:2]." This involves preparation of the officers for operational assignments which involve selection, planning, and optimization of the deployment and use of conventional and nuclear weapon systems. Eleven of the 19 graduates returned the questionnaire which consisted of three sections. The first section requested demographic information. The second section asked how relevant the graduate felt the program was with respect to his current job and long-term professional career responsibilities. Also in the second section, the GST curriculum was divided into four course areas

-- quantitative analytical methods, weapon system technology, operational methodology, and independent study. Four questions were asked of each of these four areas. First, the respondent was asked to rate the emphasis on the material in each area. Second, the respondent was asked if he was now or had he ever used the material in the four areas. Third, the respondent was asked how useful the material was in helping him structure approaches to problems and issues. Fourth, the respondent was asked how useful the material was in providing general background knowledge. The third section of the quesionnaire required the respondent to rate the need for emphasis on all the subject sub-areas.

In most cases, the responses to the second section of the questionnaire indicated that the program was somewhat relevant or highly relevant with respect to the respondent's current job, long-term professional career responsibilities, and ability to think clearly. For the curriculum evaluation, the responses to the first question, regarding the emphasis on the course material, provided an overall mean response of 2.7 with 1 being "too little" and 5 being "too much". Responses to the second question, regarding use of the material, provided an overall mean response of 3.4 with 1 being "not at all" and 5 being "often". Responses to the third question, regarding usefulness of the material in helping the graduates structure approaches to problems and issues, provided an overall mean response of 3.5 with 1 being "not at

all" and 5 being "very useful". Responses to the final question, regarding the usefulness of the material in providing general background knowledge, provided an overall mean response of 3.7 with the same 5 point scale values used for the third question. All of these responses can be interpreted to say that the program as given was about right. This section of the questionnaire also included a question asking the graduates to evaluate the length of the program and the mean response to this question was 2.4 with 1 being "too short" and 5 being "too long".

In the final section of the questionnaire, a 5 point scale was again used to rate the need for emphasis on all subject sub-areas. A response of 1 was defined as "less emphasis" and 5 as "more emphasis". The respondents provided a series of responses ranging from 1.9 to 4.1 which were generally centered on 3.0 (the "about right" response). Thus, again the graduates indicated that the program was presented at about the right balance across the subject sub-areas.

This study, unlike the first two, provided the faculty with specific feedback which could be used to assess the usefulness of the program to the graduates. It also provided specific information by subject sub-area as to where the graduates felt emphasis was or was not needed. This could be very important information if the program is to be tailored to the needs of its graduates.

CHAPTER 4

METHODOLOGY

Overview

The author developed a questionnaire to be used in gathering the data necessary to evaluate the perceived utility of the GSM program. The package mailed to graduates of past GSM classes, including the cover letter, privacy act statement, and the questionnaire, is found in appendix B.

Part I of the questionnaire included 13 demographic questions covering rank, time in service, post-graduation duty assignment, year graduated, and grade point average at graduation. Part II of the questionnaire dealt with the course content of the GSM program. This section requested that the respondents evaluate the following 11 subject areas; Managerial Accounting, Managerial Economics, Managerial Statistics, Operations Research, Technical Writing, Oral Communication, Organizational Management, Organizational Behavior, Computer Applications, Federal Financial Management, and Production Management. Each area was described in terms of the subject material presented as identified in the AFIT catalog. These areas were chosen because they are all presented in the current GSM program with the exception of Oral Communication. This subject was included because it is

recognized as a basic necessity in an Air Force career and because there are courses which provide the student the opportunity to make oral presentations.

Four statements were made which the respondents evaluated with respect to each subject area. They indicated their responses by circling the appropriate number corresponding to their choice on a seven-point scale -- with 1 being "strongly agree" and 7 being "strongly disagree". The four statements were as follows:

1. I needed to know the material in this area in order to do my job well.

2. This material was presented at a level of detail sufficient for me to do my job well.

3. The program should include more theoretical emphasis on this material.

4. The program should include more emphasis on practical applications on this material.

Analysis Techniques

The first phase of the analysis consisted of transferring the data contained in the questionnaire to the computer for use with a computer program, Statistical Package for the Social Sciences (SPSS). This was accomplished via a card deck with the data being transferred to a permanent file. Once accomplished, the frequency of responses to each question was examined, including the calculation of a simple

mean and percentage of each response where applicable.

Statistical tests can be divided into two categories -- parametric and nonparametric tests. The parametric tests depend on strict assumptions about the distribution of the population from which samples for study purposes are drawn. These assumptions require certain properties or parameters to hold before the tests can be used. "A t-test, for example, requires that the observations come from a normal population; and if this test is used in testing for differences between means, the two populations must have equal variances [7:518]." Further, "parametric statistical methods require measurement equivalent to at least an interval scale [7:520]."

In this respect, measurement of quantifiable information usually takes place on one of four levels which are represented by nominal, ordinal, interval, and ratio scales.

The weakest type of measurement is nominal scale. The objects are sorted into categories according to characteristics and each category is "named" (hence, nominal). An example would be the classifying of automobiles by make.

The next highest level of measurement is ordinal scale which expresses the relationship of order of the objects. Distinguishing military personnel by rank (i.e., Captain, Major, etc.) is an example of ordinal measurement.

The third level of measurement is interval measurement (sometimes called cardinal measurement). "The name 'interval measurement' is used because this type of scale is concerned

primarily with the distance between objects, that is, the 'interval' between them [7:5197." It must be possible to assign numbers to the objects so that the relative difference between them is reflected by the difference in the assigned numbers. A temperature measurement is an example of interval measurement.

The strongest type of measurement is represented by ratio scales. The scale has all the properties of interval measurement plus a natural origin. This permits comparisons of intervals between objects as well as the absolute values associated with each object. "Weight, length, and mass are all measured by using a ratio scale [7:5197."

When the assumptions used in parametric statistical methods do not hold or when the level of measurement is not at least interval scale, then nonparametric statistical methods should be used. Usually, these tests require only nominal or ordinal data. However, if the data is measurable on an interval scale, using nonparametric methods reduces the power of the test in terms of the use of total available information.

Accordingly, since the demographic questions of the questionnaire provided only ordinal scale data, nonparametric methods of analysis were appropriate for this study. Specifically, contingency table analysis was used to examine the relationship, if any existed, between the responses to the questions and the demographics of the respondents. This

technique utilizes the chi-square test for independence to determine the statistical significance of the relationship between the responses to the questions being examined.

The null hypothesis that the attributes under investigation are independent (e.g., the response to need for the material is independent of the respondent's rank) is tested using this technique. The observed data (questionnaire responses) are used to calculate expected frequencies for each cell of the contingency table under the assumption that the null hypothesis is true. A chi-square value is then calculated with the corresponding degrees of freedom. If the probability of obtaining a given value with corresponding degrees of freedom is .0500, or less, then the null hypothesis is rejected with 95% confidence. That is, the attributes are dependent on one another. This technique is presented in more detail in Harnett and Nie, et al.

For the purpose of the contingency table analysis, two data transformations were performed. First, the responses to the time in service question in part I were grouped as follows: 7.5 to 10.5 years, 11.0 to 13.0 years, 13.5 to 16.8 years, 17.0 to 20.0 years, and 20.5 to 26.5 years with 24, 36, 30, 32, and 20 responses, respectively. Even though these groupings are not continuous, all responses to the question are included. Second, the seven-point response scale used to answer the four statement areas was compressed as follows: responses 1 and 2 were considered "agree", re-

sponses 3, 4, and 5 were considered "neutral", and responses 6 and 7 were considered "disagree".

CHAPTER 5

ANALYSIS RESULTS

Population

In the Graduate Systems Management classes of 1969 through 1978, 268 Air Force officers graduated. As of 31 March 1981, 196 remained in the Air Force according to the records maintained at the AFIT personnel office. The author obtained the base identification for each graduate and subsequently called the base locators to obtain full addresses for each. Seven individuals could not be located as identified in the personnel office and eight individuals were separated, deceased, or no longer at the installation originally identified. As a result, the data base was 181 possible respondents. Approximately 82% (148) of the total possible respondents returned the completed questionnaire.

The rank of the respondents ranged from Captain to Colonel with 25.7% Captains, 39.9% Majors, 23.6% Lt Colonels, and 10.8% Colonels. The average time in service was about 15 years and ranged from 7.5 to 26.5 years. Table 1 provides the distribution of responses by the year the respondent graduated.

Six individuals did not respond to the question asking for their grade point average (GPA). Those who did respond,

however, provided the distribution found in table 2.

TABLE 1

RESPONSE DISTRIBUTION FOR YEAR GRADUATED

Year	Number	Frequency(%)
1969	10	6.8
1970	6	4.1
1971	6	4.1
1972	12	8.1
1973	17	11.5
1974	15	10.1
1975	18	12.2
1976	23	15.5
1977	21	14.2
1978	20	13.5
	148	100.0

TABLE 2

RESPONSE DISTRIBUTION FOR GPA

GPA	Number	Frequency(%)
3.00-3.20	20	14.1
3.21-3.40	23	16.2
3.41-3.60	30	21.1
3.61-3.80	46	32.4
3.81-4.00	23	16.2
	142	100.0

The current level of command of the respondents is provided in table 3. There was one missing response to this question.

TABLE 3

RESPONSE DISTRIBUTION FOR LEVEL OF COMMAND

Level of Command	Number	Frequency(%)
Squadron or below	27	18.4
Group	6	4.1
Wing	11	7.5
Air Division	3	2.0
Numbered Air Force	24	16.3
Major Command	22	15.0
Hq Air Force	15	10.2
Product Division	22	14.9
Other	17	11.6
	147	100.0

The current Duty Air Force Specialty Code (DAFSC) of the respondents is given in table 4.

TABLE 4

RESPONSE DISTRIBUTION FOR CURRENT DAFSC

DAFSC	Number	Frequency(%)
27XX	48	32.4
28XX	19	12.8
29XX	2	1.4
30XX	17	11.5
51XX	7	4.7
Other	55	37.2
	148	100.0

It was further requested that the respondents indicate whether they had held other DAFSCs since graduating from the GSM program. Ninety (60.8%) responded that they had and 58 (39.2%) responded that they had held no other DAFSC since graduation.

Response Overview

In general, the responses to the four statements about the subject areas of the AFIT GSM program indicate that the graduates are very applications oriented. While all the subject areas identified in the questionnaire were noted as being somewhat necessary in the performance of the respondent's job (mean response = 3.0), the subject area indicated as most needed was Oral Communication while the least needed was Managerial Economics. The data generally indicated that the level of detail presented in all the subject areas was suf-

ficient to enable the respondents to perform their jobs well (mean response = 2.9). Based on this statement, the rank ordering of the subject areas went from Managerial Statistics (mean response = 2.4) to Computer Applications (mean response = 3.9). Regarding the theoretical content of the subjects, the respondents generally indicated that the theory was about right (mean response = 4.6). The rank ordering of the subject areas based on this statement went from Computer Applications (mean response = 3.7) to Managerial Economics (mean response = 5.2). Finally, the data indicated that all subject areas should include more practical applications emphasis (mean response = 3.0). The rank ordering of the subject areas based on this statement went from Oral Communication (mean response = 2.4) to Managerial Economics (mean response = 3.6).

Course Evaluations

This section is a detailed review of the distributions of the responses by subject area to the following four statements:

1. I needed to know the material in this area in order to do my job well.

2. This material was presented at a level of detail sufficient for me to do my job well.

3. The program should include more theoretical emphasis on this material.

4. The program should include more emphasis on practical applications of this material.

Along with the number of responses, the relative frequency of each response is included in parentheses in the tables providing the distributions. Because some respondents failed to answer all the questions on the questionnaire, some tables contain less than 148 total responses. Any statistically significant relationships ($p = .0500$ or less) found between the responses for the subject areas and the demographic questions are also reported when the particular subject area is discussed. Obviously, not all of the relationships are significant as can be seen in the tables below. Each subject area will now be discussed individually.

Managerial Accounting. This course was described in the questionnaire as Managerial Accounting in terms of cost behavior, volume-profit relationships, responsibility accounting, standard costs, flexible budgets, relevant costs, cost allocations, and cost variances. The distributions of the responses to the four statements are given in table 5. A significant relationship exists between the stated need for Managerial Accounting to perform one's job well and the individual's current DAFSC (chi-square = 21.13, $p = .0202$); and between the level of detail presented and the individual's GPA (chi-square = 15.76, $p = .0460$). Tables 6 and 7 provide the contingency tables for these relationships.

TABLE 5

RESPONSES FOR MANAGERIAL ACCOUNTING

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	17 (11.6)	46 (31.1)	3 (2.0)	25 (16.9)
2	33 (22.4)	39 (26.4)	12 (8.1)	39 (26.4)
3	32 (21.8)	23 (15.5)	13 (8.8)	28 (18.9)
4	13 (8.8)	22 (14.9)	26 (17.6)	27 (18.2)
5	26 (17.7)	10 (6.8)	17 (11.5)	10 (6.8)
6	16 (10.9)	5 (3.4)	43 (29.1)	12 (8.1)
7	10 (6.8)	3 (2.0)	34 (23.0)	7 (4.7)
	147(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	3.6	2.6	5.1	3.2

TABLE 6

CURRENT DAFSC WITH NEED FOR MANAGERIAL ACCOUNTING

	27XX	28XX	29XX	30XX	51XX	Other
Agree	19	7	1	3	0	20
Neutral	24	11	1	5	4	26
Disagree	5	1	0	8	3	9

TABLE 7

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	5	11	20	28	18
Neutral	13	10	8	16	5
Disagree	2	2	2	2	0

Managerial Economics. This course was described in the questionnaire as Managerial Economics in terms of supply/demand analysis, objectives of firms, market structures (e.g., competitive, monopolistic, oligopolistic). The distributions of the responses to the four statements are provided in table 8. A significant relationship exists between the stated need for Managerial Economics to perform one's job well and both year graduated (chi-square = 36.73, p = .0057) and current DAFSC (chi-square = 27.67, p = .0020); between the level of detail presented and the individual's current level of command (chi-square = 27.95, p = .0321); and between GPA and the stated need for more theoretical emphasis (chi-square = 15.61, p = .0483). Tables 9 through 12 provide the contingency tables for these relationships.

TABLE 8

RESPONSES FOR MANAGERIAL ECONOMICS

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	2 (1.4)	40 (27.0)	3 (2.0)	15 (10.1)
2	19 (12.9)	34 (23.0)	7 (4.7)	32 (21.6)
3	31 (21.1)	26 (17.6)	15 (10.1)	29 (19.6)
4	26 (17.7)	29 (19.6)	24 (16.2)	35 (23.6)
5	25 (17.0)	10 (6.8)	20 (13.5)	13 (8.8)
6	22 (15.0)	3 (2.0)	40 (27.0)	13 (8.8)
7	22 (15.0)	6 (4.0)	39 (26.4)	11 (7.4)
	147(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	4.4	2.8	5.2	3.6

TABLE 9

YEAR GRADUATED WITH NEED FOR MANAGERIAL ECONOMICS

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Agree	2	4	0	3	4	2	2	2	1	1
Neutral	8	2	3	6	6	12	12	13	9	11
Disagree	0	0	3	3	7	1	4	8	11	7

TABLE 10

CURRENT DAFSC WITH NEED FOR MANAGERIAL ECONOMICS

	27XX	28XX	29XX	30XX	51XX	Other
Agree	7	4	2	0	0	8
Neutral	33	9	0	8	2	30
Disagree	8	6	0	8	5	17

TABLE 11

CURRENT LEVEL OF COMMAND WITH LEVEL OF DETAIL PRESENTED

	Squadron or Below	Group	Wing	Air Div	Numbered Air Force	Maj Cmd	Hq AF	Prod Div	Other
Agree	20	0	9	1	8	10	7	9	9
Neutral	7	6	1	1	14	10	7	12	7
Disagree	0	0	1	1	2	2	1	1	1

TABLE 12

GPA WITH NEED MORE THEORY

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	2	4	0	3	1
Neutral	13	9	9	17	8
Disagree	5	10	21	26	14

Managerial Statistics. This course was described in the questionnaire as statistical methods in terms of sampling distributions, point estimation, interval estimation, tests of hypotheses, regression, linear correlation, and analysis of variance. The distributions of responses to the four statements are given in table 13. A significant relationship exists between the level of detail presented and the individual's GPA (chi-square = 22.47, p = .0041). Table 14 provides the contingency table for this relationship.

TABLE 13

RESPONSES FOR MANAGERIAL STATISTICS

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	22 (15.0)	57 (38.8)	4 (2.7)	33 (22.3)
2	31 (21.1)	37 (25.2)	5 (3.4)	27 (18.2)
3	32 (21.8)	24 (16.3)	15 (10.1)	40 (27.0)
4	17 (11.6)	14 (9.5)	31 (20.9)	18 (12.2)
5	13 (8.8)	8 (5.4)	24 (16.2)	14 (9.5)
6	23 (15.6)	3 (2.0)	32 (21.6)	8 (5.4)
7	9 (6.1)	4 (2.7)	37 (25.0)	8 (5.4)
	147(100.0)	147(100.0)	148(100.0)	148(100.0)
Mean Response	3.5	2.4	5.1	3.1

TABLE 14

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	5	14	24	29	18
Neutral	11	9	6	15	3
Disagree	3	0	0	2	2

Operations Research. This course was described in the questionnaire as Operations Research in terms of linear mathematical programming, queuing theory, inventory and replacement theory, and dynamic programming. The distributions of responses to the four statements are given in table 15.

TABLE 15

RESPONSES FOR OPERATIONS RESEARCH

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	8 (5.4)	49 (33.1)	4 (2.7)	21 (14.2)
2	19 (12.9)	38 (25.7)	10 (6.8)	29 (19.6)
3	38 (25.9)	25 (16.9)	16 (10.9)	39 (26.4)
4	21 (14.3)	19 (12.8)	20 (13.6)	29 (19.6)
5	20 (13.6)	6 (4.1)	24 (16.3)	9 (6.1)
6	27 (18.4)	10 (6.8)	33 (22.4)	8 (5.4)
7	14 (9.5)	1 (0.7)	40 (27.2)	13 (8.8)
	147(100.0)	148(100.0)	147(100.0)	148(100.0)
Mean Response	4.1	2.5	5.1	3.4

A significant relationship exists between the level of detail presented in Operations Research and both the individual's current level of command (chi-square = 26.57, p = .0465) and the individual's GPA (chi-square = 22.57, p = .0040); and between the stated need for more theoretical emphasis and the individual's GPA (chi-square = 17.58, p = .0246). Tables 16 through 18 provide the contingency tables for these relationships.

TABLE 16

CURRENT LEVEL OF COMMAND WITH LEVEL OF DETAIL PRESENTED

	Squadron or Below	Group	Wing	Air Div	Numbered Air Force	Maj Cmd	Hq AF	Prod Div	Other
Agree	18	0	6	1	15	16	9	9	13
Neutral	7	6	4	1	6	6	6	10	3
Disagree	2	0	1	1	3	0	0	3	1

TABLE 17

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	8	12	23	24	16
Neutral	6	10	7	19	6
Disagree	6	1	0	3	1

TABLE 18

GPA WITH NEED FOR MORE THEORY

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	4	1	0	5	4
Neutral	11	8	8	22	7
Disagree	5	13	22	19	12

Technical Writing. This course was described in the questionnaire as Technical Writing in terms of selecting, organizing and presenting written technical information. The distributions of responses to the four statements are given in table 19.

TABLE 19

RESPONSES FOR TECHNICAL WRITING

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	63 (42.9)	27 (18.2)	10 (6.8)	49 (33.1)
2	41 (27.9)	47 (31.8)	18 (12.2)	37 (25.0)
3	19 (12.9)	32 (21.6)	21 (14.2)	20 (13.5)
4	8 (5.4)	20 (13.5)	31 (20.9)	26 (17.6)
5	4 (2.7)	6 (4.1)	18 (12.2)	4 (2.7)
6	9 (6.1)	10 (6.8)	16 (10.8)	6 (4.1)
7	3 (2.0)	6 (4.1)	34 (23.0)	6 (4.1)
	147(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	2.2	2.9	4.4	2.6

A significant relationship exists between the need for more Technical Writing practical applications emphasis and the individual's current level of command (chi-square = 29.82, p = .0189). Table 20 provides the contingency table for this relationship.

TABLE 20

CURRENT LEVEL OF COMMAND WITH NEED FOR PRACTICAL APPL.

	Squadron or Below	Group	Wing	Air Div	Numbered Air Force	Maj Cmd	Hq AF	Prod Div	Other
Agree	12	3	8	0	18	12	9	14	9
Neutral	10	3	3	1	6	9	5	5	8
Disagree	5	0	0	2	0	1	1	3	0

Oral Communications. This course was described in the questionnaire as Oral Communications in terms of collecting and organizing relevant materials for oral presentations. The distributions of responses to the four statements are given in table 21.

TABLE 21

RESPONSES FOR ORAL COMMUNICATIONS

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	92 (62.6)	20 (13.5)	16 (10.8)	59 (39.9)
2	39 (26.5)	32 (21.6)	23 (15.5)	35 (23.6)
3	5 (3.4)	35 (23.6)	26 (17.6)	23 (15.5)
4	6 (4.1)	14 (9.5)	29 (19.6)	19 (12.8)
5	0 (0.0)	21 (14.2)	12 (8.1)	3 (2.0)
6	2 (1.4)	18 (12.2)	14 (9.5)	4 (2.7)
7	3 (2.0)	8 (5.4)	28 (18.9)	5 (3.4)
	147(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	1.7	3.5	4.0	2.4

Organizational Management. This course was described in the questionnaire as Organizational Management in terms of organizational theory; management thought; organization/management research; individual and organizational goals; technology and organizations; organizational structure; authority, power, and influence; contingency views of organization; and management practice. The distributions of responses to the four statements are given in table 22. A significant relationship exists between the stated need for Organizational Management to perform one's job well and both the individual's rank (chi-square = 14.36, p = .0259) and the individual's GPA (chi-square = 16.69, p = .0335); and between the level of detail presented and both the individual's current

level of command (chi-square = 32.90, p = .0076) and the individual's GPA (chi-square = 15.93, p = .0434). Tables 23 through 26 provide the contingency tables for these relationships.

TABLE 22

RESPONSES FOR ORGANIZATIONAL MANAGEMENT

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	42 (28.4)	50 (33.8)	4 (2.7)	29 (19.6)
2	59 (39.9)	40 (27.0)	13 (8.8)	38 (25.7)
3	24 (16.2)	21 (14.2)	24 (16.2)	29 (19.6)
4	11 (7.4)	19 (12.8)	39 (26.4)	29 (19.6)
5	3 (2.0)	9 (6.1)	23 (15.5)	10 (6.8)
6	6 (4.1)	5 (3.4)	22 (14.9)	6 (4.1)
7	3 (2.0)	4 (2.7)	23 (15.5)	7 (4.7)
	148(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	2.4	2.5	4.5	3.0

TABLE 23

RANK WITH NEED FOR ORGANIZATIONAL MANAGEMENT

	Captain	Major	Lt Colonel	Colonel
Agree	21	36	29	15
Neutral	14	17	6	1
Disagree	3	6	0	0

TABLE 24

GPA WITH NEED FOR ORGANIZATIONAL MANAGEMENT

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	12	18	23	25	18
Neutral	4	5	6	18	5
Disagree	4	0	1	3	0

TABLE 25

CURRENT LEVEL OF COMMAND WITH LEVEL OF DETAIL PRESENTED

	Squadron or Below	Group	Wing	Air Div	Numbered Air Force	Maj Cmd	Hq AF	Prod Div	Other
Agree	19	2	7	0	18	13	10	11	10
Neutral	8	4	3	1	4	9	4	10	5
Disagree	0	0	1	2	2	0	1	1	2

TABLE 26

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	10	15	19	26	16
Neutral	5	8	10	17	7
Disagree	5	0	1	3	0

Organizational Behavior. This course was described in the questionnaire as Organizational Behavior in terms of behavior of individuals both in the group and as individuals. The distributions of responses to the four statements are given in table 27.

TABLE 27

RESPONSES FOR ORGANIZATIONAL BEHAVIOR

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	58 (39.2)	48 (32.4)	9 (6.1)	28 (18.9)
2	43 (29.1)	37 (25.0)	17 (11.5)	40 (27.0)
3	31 (20.9)	32 (21.6)	27 (18.2)	39 (26.4)
4	4 (2.7)	19 (12.8)	36 (24.3)	21 (14.2)
5	2 (1.4)	6 (4.1)	15 (10.1)	7 (4.7)
6	8 (5.4)	4 (2.7)	23 (15.5)	6 (4.1)
7	2 (1.4)	2 (1.4)	21 (14.2)	7 (4.7)
	148(100.0)	148(100.0)	148(100.0)	148(100.0)
Mean Response	2.2	2.5	4.2	2.9

A significant relationship exists between the stated need for Organizational Behavior to perform one's job well and the individual's rank (chi-square = 12.60, p = .0498), the year the individual graduated (chi-square = 29.74, p = .0401), and the individual's GPA (chi-square = 18.47, p = .0180). Also, a significant relationship exists between the level of

detail presented and the individual's GPA (chi-square = 29.74, p = .0002). Tables 28 through 31 provide the contingency tables for these relationships.

TABLE 28

RANK WITH NEED FOR ORGANIZATIONAL BEHAVIOR

	Captain	Major	Lt Colonel	Colonel
Agree	26	33	27	15
Neutral	9	19	8	1
Disagree	3	7	0	0

TABLE 29

YEAR GRADUATED WITH NEED FOR ORGANIZATIONAL BEHAVIOR

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Agree	4	3	5	12	13	6	16	14	14	14
Neutral	4	3	1	0	4	8	2	5	6	4
Disagree	2	0	0	0	0	1	0	4	1	2

TABLE 30

GPA WITH NEED FOR ORGANIZATIONAL BEHAVIOR

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	11	22	19	28	16
Neutral	5	1	10	14	7
Disagree	4	0	1	4	0

TABLE 31

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	8	17	18	23	16
Neutral	7	6	12	22	7
Disagree	5	0	0	1	0

Computer Applications. This course was described in the questionnaire as Computer Applications in terms of capabilities and limitations of computer usage. The distributions of responses to the four statements are given in table 32.

TABLE 32

RESPONSES FOR COMPUTER APPLICATIONS

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	31 (21.1)	18 (12.3)	13 (8.8)	50 (34.0)
2	38 (25.9)	19 (13.0)	27 (18.4)	39 (26.5)
3	37 (25.2)	27 (18.5)	31 (21.1)	31 (21.1)
4	17 (11.6)	29 (19.9)	34 (23.1)	15 (10.2)
5	11 (7.4)	19 (13.0)	14 (9.5)	6 (4.1)
6	11 (7.4)	21 (14.4)	13 (8.8)	2 (1.4)
7	2 (1.4)	13 (8.9)	15 (10.2)	4 (2.7)
	147(100.0)	146(100.0)	147(100.0)	147(100.0)
Mean Response	2.9	3.9	3.7	2.4

Federal Financial Management. This course was described in the questionnaire as Federal Financial Management in terms of the Federal budget process, Congressional budget reform, concepts of the planning/programming/budgeting and zero-base budgeting processes. The distributions of responses to the four statements are given in table 33.

TABLE 33

RESPONSES FOR FEDERAL FINANCIAL MANAGEMENT

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	66 (44.6)	27 (18.2)	16 (10.9)	54 (36.5)
2	37 (25.0)	28 (18.9)	20 (13.6)	36 (24.3)
3	20 (13.5)	32 (21.6)	20 (13.6)	26 (17.6)
4	4 (2.7)	20 (13.5)	32 (21.8)	16 (10.8)
5	8 (5.4)	19 (12.8)	12 (8.2)	6 (4.1)
6	8 (5.4)	17 (11.5)	21 (14.3)	6 (4.1)
7	5 (3.4)	5 (3.4)	26 (17.7)	4 (2.7)
	148(100.0)	148(100.0)	147(100.0)	148(100.0)
Mean Response	2.3	3.3	4.2	2.5

A significant relationship exists between the stated need for Federal Financial Management to perform one's job well and current DAFSC (chi-square = 23.06, p = .0105); between year graduated and both level of detail presented (chi-square = 34.55, p = .0114) and the stated need for more theoretical emphasis (chi-square = 32.60, p = .0187); and

between current level of command and the stated need for more practical applications emphasis (chi-square = 31.22, p = .0125). Tables 34 through 37 provide the contingency tables for these relationships.

TABLE 34

CURRENT DAFSC WITH NEED FOR FEDERAL FINANCIAL MANAGEMENT

	27XX	28XX	29XX	30XX	51XX	Other
Agree	38	14	1	8	2	40
Neutral	5	5	1	5	5	11
Disagree	5	0	0	4	0	4

TABLE 35

YEAR GRADUATED WITH LEVEL OF DETAIL PRESENTED

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Agree	1	0	1	5	3	6	12	10	6	11
Neutral	5	3	5	6	11	7	3	10	14	7
Disagree	4	3	0	1	3	2	3	3	1	2

TABLE 36

YEAR GRADUATED WITH NEED MORE THEORY

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Agree	2	2	1	4	11	4	2	6	2	2
Neutral	6	3	5	5	3	5	11	8	8	10
Disagree	2	1	0	3	3	6	5	9	11	7

TABLE 37

CURRENT LEVEL OF COMMAND WITH NEED MORE PRACTICAL APPL.

	Squadron or Below	Group	Wing	Air Div	Numbered Air Force	Maj Cmd	Hq AF	Prod Div	Other
Agree	18	1	9	1	16	12	9	15	8
Neutral	8	4	2	0	6	9	5	5	9
Disagree	1	1	0	2	2	1	1	2	0

Production Management. This course was described in the questionnaire as Production Management in terms of modern manufacturing concepts, practices and techniques of product planning, capacity planning, quality control and product control. The distributions of responses to the four statements are given in table 38. A significant relationship exists between the level of detail presented and both the year the individual graduated (chi-square = 32.71, p = .0181) and the individual's GPA (chi-square = 15.99, p = .0425). Tables 39 and 40 provide the contingency tables for these relationships.

TABLE 38

RESPONSES FOR PRODUCTION MANAGEMENT

Response	Needed On Job	Level Presented	More Theory	More Practical Appl.
1	17 (11.6)	24 (16.2)	2 (1.4)	20 (13.5)
2	26 (17.7)	38 (25.7)	16 (10.9)	27 (18.2)
3	39 (26.5)	31 (20.9)	15 (10.2)	23 (15.5)
4	24 (16.3)	31 (20.9)	48 (32.7)	43 (29.1)
5	14 (9.5)	11 (7.4)	21 (14.3)	13 (8.8)
6	17 (11.6)	9 (6.1)	17 (11.6)	12 (8.1)
7	10 (6.8)	4 (2.7)	28 (19.0)	10 (6.8)
	147(100.0)	148(100.0)	147(100.0)	148(100.0)
Mean Response	3.6	3.1	4.6	3.5

TABLE 39

YEAR GRADUATED WITH LEVEL OF DETAIL PRESENTED

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Agree	2	2	2	6	4	5	14	8	7	12
Neutral	8	2	4	5	11	6	4	14	12	7
Disagree	0	2	0	1	2	4	0	1	2	1

TABLE 40

GPA WITH LEVEL OF DETAIL PRESENTED

	3.00-3.20	3.21-3.40	3.41-3.60	3.61-3.80	3.81-4.00
Agree	2	8	16	20	14
Neutral	14	14	12	22	7
Disagree	4	1	2	4	2

Response Summary

Tables 41 through 44 provide a summary of the mean responses to the four statements by subject area. Each table is rank ordered from lowest to highest mean response value. Also, the overall mean is included in each table.

TABLE 41

RESPONSE SUMMARY OF NEED FOR SUBJECT AREAS ON THE JOB

Subject Area	Mean Response
Oral Communication	1.7
Organizational Behavior	2.2
Technical Writing	2.2
Federal Financial Management	2.3
Organizational Management	2.4
Computer Applications	2.9
Managerial Statistics	3.5
Production Management	3.6
Managerial Accounting	3.6
Operations Research	4.1
Managerial Economics	4.4
Overall Mean Response	3.0

TABLE 42

RESPONSE SUMMARY OF LEVEL OF DETAIL PRESENTED

Subject Area	Mean Response
Managerial Statistics	2.4
Organizational Behavior	2.5
Organizational Management	2.5
Operations Research	2.5
Managerial Accounting	2.6
Managerial Economics	2.8
Technical Writing	2.9
Production Management	3.1
Federal Financial Management	3.3
Oral Communication	3.5
Computer Applications	3.9
Overall Mean Response	2.9

TABLE 43

RESPONSE SUMMARY OF NEED FOR MORE THEORETICAL EMPHASIS

Subject Area	Mean Response
Computer Applications	3.7
Oral Communication	4.0
Federal Financial Management	4.2
Organizational Behavior	4.2
Technical Writing	4.4
Organizational Management	4.5
Production Management	4.6
Managerial Accounting	5.1
Managerial Statistics	5.1
Operations Research	5.1
Managerial Economics	5.2
Overall Mean Response	4.6

TABLE 44

RESPONSE SUMMARY OF NEED FOR MORE PRACT. APPL. EMPHASIS

Subject Area	Mean Response
Oral Communication	2.4
Computer Applications	2.4
Federal Financial Management	2.5
Technical Writing	2.6
Organizational Behavior	2.9
Organizational Management	3.0
Managerial Statistics	3.1
Managerial Accounting	3.2
Operations Research	3.4
Production Management	3.5
Managerial Economics	3.6
Overall Mean Response	3.0

Summary of Written Comments

The last statement on the questionnaire instructed the respondents to identify any area(s) which they felt should be included in the AFIT GSM program. Of the 148 returned questionnaires, 59 contained no comments, 28 contained comments with no new information (i.e., these just reiterated what was included in the responses to the other questions) and nine contained non-constructive comments. The 52 remaining questionnaires contained constructive comments which are included in appendix C. Table 45 is a rank ordered summary of the written comments by subject area.

TABLE 45

WRITTEN COMMENTS BY SUBJECT AREA

Subject Area	Number	Frequency(%)
AF Procurement	15	26.3
AF Mgt. Case Studies/Applications	12	21.0
Configuration Control/Management	5	8.7
Marketing Management	4	7.0
AFLC Policies/Procedures	3	5.2
Cost Estimation	2	3.5
Mgt. Information Systems	2	3.5
Long Range Strategic Planning	2	3.5
Computer Software Mgt.	2	3.5
C/SCSC	2	3.5
Program Control/Financial Mgt.	2	3.5
Time Mgt. Supervision	1	1.8
Requirements Process	1	1.8
Org. Behavior Communication	1	1.8
AFSCP 800-3	1	1.8
Foreign Military Sales	1	1.8
History of Technology	1	1.8
	57	100.0

CHAPTER 6

CONCLUSIONS

The objective of this research was to examine the hypothesis that the GSM program was properly structured to meet the needs of the graduates in a variety of career fields. It appears that in total, the GSM program meets the needs of its graduates as indicated by the responses on the returned questionnaires. When asked whether each subject area was needed to perform their jobs well, the respondents provided an overall mean response of 3.0 with the responses ranging from 1.7 to 4.4 (see table 41). This was on a scale of 1 to 7 with 1 being "strongly agree" and 7 being "strongly disagree". Five subject areas received at least 50% of the responses in the agree category (responses 1 and 2) which can be interpreted as being definitely needed. These subjects were Oral Communication, Organizational Behavior, Technical Writing, Federal Financial Management, and Organizational Management. Based on the data, the responses for the remaining six subject areas can be interpreted as indecisive regarding the need for the subject material. Each of the five "needed" subjects will now be discussed.

Not surprisingly, Oral Communication ranked first with respect to the stated need for the subject material to perform

one's job well. However, it is not presented as a specific core course within the GSM program and rightly so. A formal course in oral communication is more properly included in an undergraduate program. However, the responses of the graduates indicate that this area is a definite requirement across all Air Force specialities. As a result, it seems apparent that where practical and possible, the GSM program should provide the students the opportunity to give oral presentations. Currently, an elective (CT 5.46, Speech for Military Managers) is offered which would satisfy this need. However, this elective is very limited in the number of students permitted in each class and in the number of times it is offered. One possible solution would be to restructure some of the existing core courses to allow students the opportunity to make oral presentations. This approach should be applied only where practical, recognizing that some subjects lend themselves more to this approach than others. The fact that Oral Communication ranked first with respect to the stated need for more practical applications emphasis (mean response = 2.4) supports the need for this type of approach.

Organizational Behavior ranked second with respect to the stated need for the subject material to perform one's job well. In general, the percentage that agreed with the need for Organizational Behavior increased as the rank of the respondents increased. However, the percentage that

agreed was relatively constant with respect to grade point average with the lowest response being 55% in agreement. The relationship of the responses to rank follows from the fact that, in most cases, as rank increases so does the individual's management responsibility. This increases the need to understand the behavior of people in groups and as individuals. The GSM program, as structured, is apparently meeting the stated needs of the graduates in this area. This is evident since Organizational Behavior was ranked second with respect to the statement that the level of detail presented in the program was sufficient to enable the graduates to do their jobs well (mean response = 2.5).

Technical Writing ranked third with respect to the stated need for the subject material to perform one's job well. Here, as with Oral Communication, is a subject that is very important to all Air Force officers. The response to the statement concerning the level of detail presented (mean response = 2.9) indicates that the program is about right as far as that aspect is concerned. However, the graduates indicated that the program needs more practical applications emphasis (mean response = 2.6). The need for Technical Writing seems to increase as the level of command also increases. This, in conjunction with some hand written comments (see appendix C) indicates there is a need to practice writing in a style more similar to that which the graduates would need on a daily basis. It is probably the exception rather than

the rule to find Air Force officers who write more in a "thesis type" style than in the formal "Air Force" style. As a result, some consideration should be given to this aspect within the Technical Writing course. There are currently plenty of opportunities within the other core courses of the GSM program to practice writing term papers and research papers in preparation for the formal thesis.

Federal Financial Management ranked fourth with respect to the stated need for the subject material to perform one's job well. The graduates currently working in an acquisition type DAFSC (27XX, 28XX, and 29XX) definitely needed this material as did those that responded in the "other" category. Those in the 30XX and 51XX DAFSCs indicated they needed this material significantly less than the other four categories. The GSM program seems to contain a sufficient level of detail for this subject; however, it ranked third with respect to the stated need for more practical applications emphasis (mean response = 2.5).

Organizational Management ranked fifth with respect to the stated need for the subject material to perform one's job well. As with Organizational Behavior, the percentage in agreement with the need for Organizational Management increased as the rank of the respondent increased. This also can be attributed to the fact that the individual's level of management responsibility is a function of his rank. Here again, the stated need was independent of the respon-

dent's GPA. There was 54% or better in agreement in each GPA category regarding the need for Organizational Management. This relationship was also noted for the responses for the GPA categories with respect to the level of detail presented. For this statement Organizational Management ranked third (mean response = 2.5).

The five subject areas just discussed all received a response of "agree" from at least 50% of the respondents. Hence, these were considered the "needed" subjects. The remaining six subject areas did not receive a majority of responses in either the "neutral" or "disagree" categories.

Although this completes the discussion of the five subject areas considered "needed", there is other information obtained from the responses which is pertinent to the GSM program. First, two subject areas received responses of "disagree", for the statement concerning theoretical emphasis, from 50% or more of the respondents. Evidently the graduates felt there was too much theory in those areas. The areas were Managerial Accounting (52.0%) and Managerial Economics (53.4%). However, the mean response for all the subject areas ranged from 3.7 to 5.2 with an overall mean response of 4.6 (see table 43). This can be interpreted to say that the theoretical content of the total program is about right. However, the program is not evenly balanced. The responses to the statement concerning practical applications emphasis ranged from 2.4 to 3.6 with an overall

mean response of 3.0 (see table 44). This indicates a general need for more applications emphasis across all subject areas. Some compromise seems needed between the amount of theoretical emphasis and the amount of practical applications emphasis presented in the GSM program, given the program is to remain only 15 months long.

The second important point is that the write-in comments indicate a need for some study of Air Force procurement (see table 45 and appendix C). Currently, an elective (CM 5.52, Contract Management Theory) is available but is limited in how often it is offered. Those students entering Air Force Systems Command, any time after AFIT, definitely need to be familiar with Air Force procurement policies and procedures. Anyone who has worked in Air Force Systems Command can appreciate the importance of an understanding of procurement procedures and SPO/Contractor relationships. As a result, this material should be included in the basic program or, at the very least, it should be available to those students going into acquisition type DAFSCs as a recommended elective.

CHAPTER 7

SUMMARY/RECOMMENDATIONS

Summary

AFIT has the responsibility of providing for the education of Air Force personnel. Therefore, it is necessary to ensure a proper balance between the theoretical content and the practical applications content of the program. An improper balance can turn a graduate "education" which provides the individual with the tools to think logically through problem situations into a "training" program which provides the individual with a "bag of tricks" and instructions on when to use them in day-to-day activities. As a result, any changes made to graduate programs must be reviewed from a total program perspective to ensure the proper balance of emphasis -- a systems management approach. It is important to realize, however, that most of those attending AFIT are Air Force officers and, as such, are relatively restricted in future assignments. Since the jobs of AFIT graduates from individual programs are somewhat predictable and similar in nature, it seems logical that the AFIT programs can be more specialized than programs at civilian institutions. Therefore, certain areas can and should be tailored to specific Air Force applications. To effectively tailor the

programs, it is necessary to conduct periodic studies such as this one to enable the Air Force to understand the on-the-job needs of its graduates. This study has shown that the graduates feel there should be more practical applications emphasis and less theoretical emphasis. Further, Oral Communication was thought of as the most needed subject area on the job followed by Organizational Behavior, Technical Writing, Federal Financial Management, and Organizational Management. The mean response to the other six subject areas indicated they were also needed on the job, but to a lesser extent. The data further indicated that the level of detail presented in the 11 subject areas was about right to enable the graduates to perform their jobs well.

The graduates appear to be saying that the program is just about right. It seems probable that as the graduates work in various jobs, and time passes, they tend to forget or ignore some of the problems of the rigorous AFIT GSM program. Hence, the responses would tend to favor the existing program, as was the case in this study and in the three studies reviewed in Chapter 3. However, collecting and analyzing information such as this will allow for better utilization of AFIT resources and, at the same time, ensure that Air Force managers are provided with the basic tools necessary to perform their jobs.

Based on the responses of the graduates in this study, the GSM program as a whole seems to be meeting the needs of

the program graduates. Therefore, the hypothesis that the program is structured properly to meet the needs of its graduates in a variety of career fields is basically supported by the data collected in this study. However, this study has identified areas where improvements apparently are needed. If acted upon, the improvements will enhance the usefulness of the GSM program in the eyes of its graduates which in turn will facilitate the accomplishment of the Air Force mission.

Recommendations For Future Research

It is recommended that this type of program evaluation be accomplished for all the programs at AFIT. The studies should be conducted about every three to four years to allow the graduates the opportunity to gain some experience in their follow-on jobs. Regarding the GSM program, follow-on studies should include questions requesting the graduates to self-evaluate the program in terms of such things as problem solving abilities as a result of attending the AFIT GSM program, general usefulness of the program, etc. These questions in conjunction with the questionnaire used in this study will provide invaluable feedback to the faculty at AFIT as well as the students enrolled in the GSM program.

APPENDIX A

GSM CURRICULA FOR 1965-1980

GSM Curriculum (Reference 1965-1967 AFIT Catalog)

MA 2.31 Elements of Linear Algebra
SM 4.50 Probability of Theory
SM 4.74 Management Thought and Theory
SM 5.15 Managerial Accounting and Control

SM 4.54 Managerial Statistics
SM 5.80 Manufacturing Management I
SM 6.18 Cost Accounting and Cost Estimating
SM 6.30 Economic Analysis I

SM 5.50 Operations Research I
SM 5.86 Manufacturing Management II
SM 5.90 Systems Management
SM 6.34 Economic Analysis II
Elective

SM 4.11 Federal Government Financial Management
SM 6.50 Operations Research II
SM 6.90 Systems Management Seminar
SM 6.94 Systems Management Decision Dynamics
Elective
Elective

SM 6.99 Independent Research (Formal Tech. Report)

GSM Curriculum (Reference 1967-1969 AFIT Catalog)

MA 2.31 Elements of Linear Algebra
SM 4.50 Probability Theory
SM 4.74 Management Thought and Theory
SM 5.15 Managerial Accounting and Control

SM 4.54 Managerial Statistics
SM 5.50 Operations Research I
SM 6.18 Cost Estimating and Analysis
SM 6.30 Economic Analysis I

SM 5.81 Manufacturing Management
SM 5.90 Systems Management
SM 6.34 Economic Analysis II
SM 6.50 Operations Research II
SM 6.99 Independent Research (Formal Tech. Report)
Elective
Elective

SM 6.99 Independent Research (Formal Tech. Report)
SM 6.90 Systems Management Seminar
SM 6.94 Systems Management Decision Dynamics
Elective
Elective

GSM Curriculum (Reference 1969-1971 AFIT Catalog)

Financial Management and Economics

SM 6.00 Financial Measurements for Management I
SM 7.00 Financial Measurements for Management II
SM 5.20 Managerial Economics I
SM 6.20 Managerial Economics II

Management

SM 5.40 Management Thought and Theory
SM 6.40 Systems Management
SM 7.40 Systems Management Seminar
SM 5.44 Production Management
SM 6.46 Behavioral Science in Management

Operations Research

SM 6.60 Operations Research I
SM 7.60 Operations Research II
SM 7.72 Decision Dynamics

Mathematics

MA 2.31 Elements of Linear Algebra
SM 5.80 Managerial Statistics I
SM 6.80 Managerial Statistics II

Electives - 2

Thesis

GSM Curriculum (Reference 1971-1973 AFIT Catalog

Financial Management and Economics

SM 6.00 Financial Measurements for Management I
SM 7.00 Financial Measurements for Management II
SM 5.20 Managerial Economics I
SM 6.20 Managerial Economics II

Management

SM 5.40 Management Thought and Theory
SM 6.40 Systems Management
SM 7.40 Systems Management Seminar
SM 5.44 Production Management
SM 6.46 Behavioral Science in Management

Operations Research

SM 6.60 Operations Research I
SM 7.60 Operations Research II
SM 7.72 Decision Dynamics

Mathematics

MA 2.31 Elements of Linear Algebra
SM 5.80 Managerial Statistics I
SM 6.80 Managerial Statistics II

Electives - 2

Thesis

GSM Curriculum (Reference 1973-1975 AFIT Catalog)

Financial Management and Economics

SM 6.00 Financial Measurements for Management I
SM 7.00 Financial Measurements for Management II
SM 5.20 Managerial Economics I
SM 6.20 Managerial Economics II

Management

SM 5.40 Management Thought and Theory
SM 6.40 Systems Management
SM 7.40 Systems Management Seminar
SM 5.44 Production Management
SM 6.46 Behavioral Science in Management

Operations Research

SM 6.60 Operations Research I
SM 7.60 Operations Research II
SM 7.72 Decision Dynamics

Mathematics

SM 5.80 Managerial Statistics I
SM 6.80 Managerial Statistics II

Electives - 3

Thesis

GSM Curriculum (Reference 1974-1976 AFIT Catalog)

Financial Management and Economics

SM 6.00 Financial Management I
SM 7.00 Financial Management II
SM 5.20 Managerial Economics I
SM 6.20 Managerial Economics II

Management

SM 5.40 Management Thought and Theory
SM 6.40 Systems Management
SM 7.40 Systems Management Seminar
SM 5.44 Production Management
SM 6.46 Behavioral Science in Management

Operations Research

SM 6.60 Operations Research I
SM 7.60 Operations Research II

Mathematics

SM 5.80 Managerial Statistics I
SM 6.80 Managerial Statistics II

Electives - 3

Thesis

GSM Curriculum (Reference 1976-1978 AFIT Catalog)

Financial Management and Economics

SM 6.00 Managerial Accounting
SM 7.00 Accounting Issues for Defense Contracts
SM 5.20 Managerial Economics I
SM 6.20 Managerial Economics II

Management

SM 5.40 Management Thought and Theory
SM 6.40 Systems Management
SM 7.40 Systems Management Seminar
SM 5.44 Production Management
SM 6.46 Behavioral Science in Management

Operations Research

SM 6.60 Operations Research I
SM 7.60 Operations Research II

Mathematics

SM 5.80 Managerial Statistics I
SM 6.80 Managerial Statistics II

Electives - 3

Thesis

GSM Curriculum (Reference 1978-1979 AFIT Catalog)

Financial Management and Economics

- SM 6.00 Managerial Accounting
- SM 7.00 Accounting Issues for Defense Contracts
- SM 5.20 Managerial Economics I
- SM 6.20 Managerial Economics II
- SM 6.02 Federal Financial Management

Management

- SM 5.40 Management Thought and Theory
- SM 6.40 Systems Management
- SM 5.44 Production Management
- SM 6.46 Behavioral Sciences in Management

Operations Research

- SM 6.60 Operations Research I
- SM 7.60 Operations Research II

Mathematics and Statistics

- SM 5.80 Managerial Statistics I
- SM 6.80 Managerial Statistics II

Electives - 3

Thesis

GSM Curriculum (Reference 1979-1981 AFIT Catalog)

Short Term

AM 3.00 Accounting Principles

Quarter I

AM 5.20 Managerial Economics I
OS 5.40 Management Thought and Theory
MA 5.92 Managerial Statistics I
AM 6.00 Managerial Accounting
CT 6.85 Communication for Managers and Analysts

Quarter II

CT 3.98 Research Methods
AM 6.20 Managerial Economics II
OP 6.60 Operations Research I
MA 6.92 Managerial Statistics II
AM 7.00 Accounting Issues for Defense Contracts

Quarter III

LM 5.44 Production Management
AM 6.02 Federal Financial Management
OP 7.60 Operations Research II
OS 6.46 Behavioral Science in Management

Quarter IV

CT 7.99 Independent Study (Thesis)
Elective
Elective

Short Term

CT 7.99 Independent Study (Thesis)

Quarter V

OS 6.40 Seminar in Systems Management
CT 7.99 Independent Study (Thesis)
Elective

APPENDIX B

PACKAGE SENT TO GSM GRADUATES

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

24 APR 1981

REPLY TO ATTN OF LSH (LSSR 54-81)/Lt E. Speck/AUTOVON 785-7432

SUBJECT Perceived Utility of AFIT Graduate Systems Management Program Questionnaire

TO

1. The attached questionnaire was prepared by a student of the Graduate Systems Management class of 81S as part of a thesis project at the Air Force Institute of Technology. We are sending it to all graduates of the Graduate Systems Management Program in the years 1969 through 1978. We believe the results of the project will be very useful in maintaining and improving the effectiveness of the program. In particular, we want to be sure the program is meeting the changing needs of Air Force managers.

2. We would appreciate your cooperation in completing the questionnaire, yet your participation is voluntary. Please provide an answer or comment for each question as applicable and remove this cover letter before mailing so your responses can be kept confidential. Air University Survey Control Number (AU SCN) 81-7 has been assigned. Please return the completed questionnaire in the attached envelope within one week of receipt.

3. Thank you.

CHARLES R. MARGENTHALER, Col, USAF
Dean
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

AIR FORCE—A GREAT WAY OF LIFE

A

PRIVACY ACT STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and/or

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

AU SCN 81-7

PERCEIVED UTILITY OF THE

AFIT GRADUATE SYSTEMS MANAGEMENT PROGRAM

Part I

Please circle the letter of the appropriate response or fill in the blank where applicable.

1. What is your rank?

   A. Lt
   B. Capt
   C. Maj
   D. Lt Col
   E. Col

2. How much time in service do you have? _____

3. In what year did you graduate from the AFIT Systems Management Program?

   A. 1969
   B. 1970
   C. 1971
   D. 1972
   E. 1973
   F. 1974
   G. 1975
   H. 1976
   I. 1977
   J. 1978

4. What was your cumulative grade point average (GPA) at graduation?

   A. 3.00-3.20
   B. 3.21-3.40
   C. 3.41-3.60
   D. 3.61-3.80
   E. 3.81-4.00

5. At what level of command is your current assignment?

   A. Squadron or below
   B. Group
   C. Wing
   D. Air Division
   E. Numbered Air Force
   F. Major Command
   G. HQ Air Force
   H. Product Division
   I. Other

6. What is your current Duty Air Force Specialty Code (DAFSC)?

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

7. Have you held any other DAFSC since graduation?

A. Yes
B. No

If your answer was yes to question 7, use questions 8-13 to trace your DAFSCs since graduation.

If your answer was no to question 7, go to Part II of the survey.

8. My first DAFSC upon graduation was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

9. My next DAFSC was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

10. My next DAFSC was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

11. My next DAFSC was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

12. My next DAFSC was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

13. My next DAFSC was:

A. 27XX
B. 28XX
C. 29XX
D. 30XX
E. 51XX
F. Other

PERCEIVED UTILITY OF THE

AFIT GRADUATE SYSTEMS MANAGEMENT PROGRAM

Part II

The statements in this section deal with the course content of your program at AFIT. Your responses should be based on your total job experience since graduation. Please use the following scale for your responses:

Strongly Agree						Strongly Disagree
1	2	3	4	5	6	7

Consider the following statement when responding to numbers 14-24:

I needed to know the material in this area in order to do my job well.

14. Managerial accounting in terms of cost behavior, volume-profit relationships, responsibility accounting, standard costs, flexible budgets, relevant costs, cost allocations and cost variances.

1 2 3 4 5 6 7

15. Managerial economics in terms of supply/demand analysis, objectives of firms, market structures (e.g., competitive, monopolistic, oligopolistic).

1 2 3 4 5 6 7

16. Statistical methods in terms of sampling distributions, point estimation, interval estimation, tests of hypotheses, regression, linear correlation, and analysis of variance.

1 2 3 4 5 6 7

17. Operations research in terms of linear mathematical programming, queuing theory, inventory and replacement theory, and dynamic programming.

1 2 3 4 5 6 7

18. Technical writing in terms of selecting, organizing and presenting written technical information.

1 2 3 4 5 6 7

19. Oral communications in terms of collecting and organizing relevant materials for oral presentations.

1 2 3 4 5 6 7

20. Organizational management in terms of organization theory; management thought; organization/management research; individual and organizational goals; technology and organizations; organizational structure; authority, power, and influence; contingency views of organization; and management practice.

1 2 3 4 5 6 7

21. Organizational behavior in terms of behavior of individuals both in the group and as individuals.

1 2 3 4 5 6 7

22. Computer applications in terms of capabilities and limitations of computer usage.

1 2 3 4 5 6 7

23. Federal financial management in terms of the Federal budget process, Congressional budget reform, concepts of the planning/programming/budgeting and zero-base budgeting processes.

1 2 3 4 5 6 7

24. Production management in terms of modern manufacturing concepts, practices and techniques of product planning, capacity planning, quality control and production control.

1 2 3 4 5 6 7

Consider the following statement when responding to numbers 25-35:

<u>This material was presented at a level of detail sufficient for me to do my job well</u>.

25. Managerial accounting in terms of cost behavior,

volume-profit relationships, responsibility accounting, standard costs, flexible budgets, relevant costs, cost allocations and cost variances.

1 2 3 4 5 6 7

26. Managerial economics in terms of supply/demand analysis, objectives of firms, market structures.

1 2 3 4 5 6 7

27. Statistical methods in terms of sampling distributions, point estimation, interval estimation, tests of hypotheses, regression, linear correlation, and analysis of variance.

1 2 3 4 5 6 7

28. Operations research in terms of linear mathematical programming, queuing theory, inventory and replacement theory, and dynamic programming.

1 2 3 4 5 6 7

29. Technical writing in terms of selecting, organizing, and presenting written technical information.

1 2 3 4 5 6 7

30. Oral communications in terms of collecting and organizing relevant materials for oral presentations.

1 2 3 4 5 6 7

31. Organizational management in terms of organization theory; management thought; organization/management research; individual and organizational goals; technology and organizations; organizational structure; authority, power, and influence; contingency views of organization; and management practice.

1 2 3 4 5 6 7

32. Organizational behavior in terms of behavior of individuals in the group and as individuals.

1 2 3 4 5 6 7

33. Computer applications in terms of capabilities and limitations of computer usage.

1 2 3 4 5 6 7

34. Federal financial management in terms of the Federal budget process, Congressional budget reform, concepts of the planning/programming/budgeting and zero-base budgeting processes.

1 2 3 4 5 6 7

35. Production management in terms of modern manufacturing concepts, practices and techniques of product planning, capacity planning, quality control and production control.

1 2 3 4 5 6 7

Consider the following statement when responding to numbers 36-46:

<u>The program should include more THEORETICAL emphasis on this material</u>.

36. Managerial accounting in terms of cost behavior, volume-profit relationships, responsibility accounting, standard costs, flexible budgets, relevant costs, cost allocations and cost variances.

1 2 3 4 5 6 7

37. Managerial economics in terms of supply/demand analysis, objectives of firms, and market structures.

1 2 3 4 5 6 7

38. Statistical methods in terms of sampling distributions, point estimation, interval estimation, tests of hypotheses, regression, linear correlation, and analysis of variance.

1 2 3 4 5 6 7

39. Operations research in terms of linear mathematical programming, queuing theory, inventory and replacement theory, and dynamic programming.

1 2 3 4 5 6 7

40. Technical writing in terms of selecting, organizing, and presenting written technical information.

1 2 3 4 5 6 7

41. Oral communications in terms of collecting and organizing relevant materials for oral presentations.

1 2 3 4 5 6 7

42. Organizational management in terms of organization theory; management thought; organization/management research; individual and organizational goals; technology and organizations; organizational structure; authority, power, and influence; contingency views of organization; and management practice.

1 2 3 4 5 6 7

43. Organizational behavior in terms of behavior of individuals both in the group and as individuals.

1 2 3 4 5 6 7

44. Computer applications in terms of capabilities and limitations of computer usage.

1 2 3 4 5 6 7

45. Federal financial management in terms of the Federal budget process, Congressional budget reform, concepts of the planning/programming/budgeting and zero-base budgeting processes.

1 2 3 4 5 6 7

46. Production management in terms of modern manufacturing concepts, practices and techniques of product planning, capacity planning, quality control and production control.

1 2 3 4 5 6 7

Consider the following statement when responding to numbers 47-57:

<u>The program should include more emphasis on PRACTICAL APPLICATION of this material</u>.

47. Managerial accounting in terms of cost behavior, volume-profit relationships, responsibility accounting, standard costs, flexible budgets, relevant costs, cost allocations and cost variances.

1 2 3 4 5 6 7

48. Managerial economics in terms of supply/demand analysis, objectives of firms, and market structures.

1 2 3 4 5 6 7

49. Statistical methods in terms of sampling distributions, point estimation, interval estimation, tests of hypotheses, regression, linear correlation, and analysis of variance.

1 2 3 4 5 6 7

50. Operations research in terms of linear mathematical programming, queuing theory, inventory and replacement theory, and dynamic programming.

1 2 3 4 5 6 7

51. Technical writing in terms of selecting, organizing, and presenting written technical information.

1 2 3 4 5 6 7

52. Oral communications in terms of collecting and organizing relevant materials for oral presentations.

1 2 3 4 5 6 7

53. Organizational management in terms of organization theory; management thought; organization/management research; individual and organizational goals; technology and organizations; organizational structure; authority, power, and influence; contingency views of organization; and management practice.

1 2 3 4 5 6 7

54. Organizational behavior in terms of behavior of individuals both in the group and as individuals.

1 2 3 4 5 6 7

55. Computer applications in terms of capabilities and limitations of computer usage.

1 2 3 4 5 6 7

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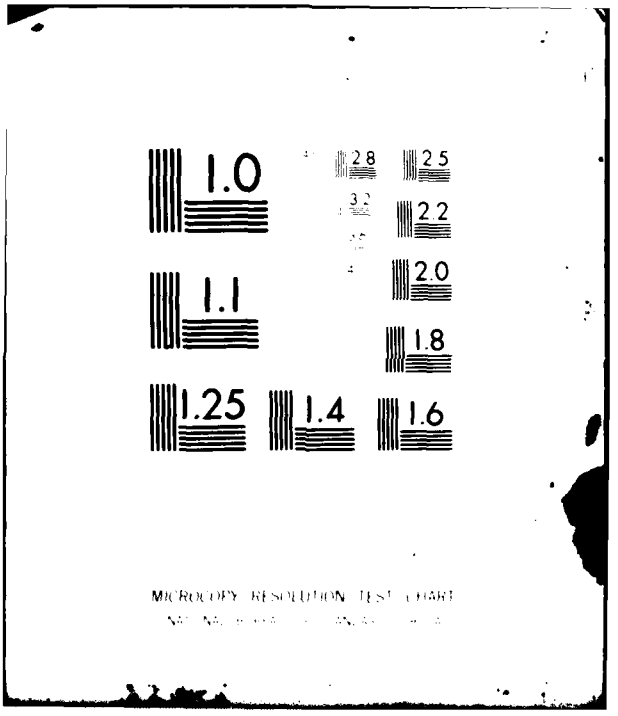
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56. Federal financial management in terms of the Federal budget process, Congressional budget reform, concepts of the planning/programming/budgeting and zero-base budgeting processes.

1 2 3 4 5 6 7

57. Production management in terms of modern manufacturing concepts, practices and techniques of product planning, capacity planning, quality control and production control.

1 2 3 4 5 6 7

58. Use the following space (and the back if necessary) to identify any area(s) which you feel should be included in the AFIT Systems Management Program.

APPENDIX C

WRITTEN COMMENTS

This appendix includes the constructive comments written in response to the last question of the questionnaire asking the respondents to identify area(s) which they felt should be included in the AFIT GSM program. The following includes direct quotes with no attempt to correct mistakes in grammer. Other comments received, but not included in the appendix, were not constructive in nature (i.e., they did not attempt to identify any new areas of study which should be included in the GSM program).

"I always felt that we were spending too much time on detailed quantitative techniques at the expense of the Big Picture. But at the time, it was difficult to determine what specialty/area each student would need in his SPO job. I needed more details on SPO/Contractor relationships and felt case studies in that area would have been more beneficial."

"Time Management Supervision - to include practical applications of delegating, directing, control, personal evaluation."

"The Air Force and DOD Requirements process. Operational analysis of actual Air Force requirements. The program should have missile and space oriented students look into missile and space requirements; communications and electronics oriented students look into comm and electronics requirements; etc."

"How theoretical fields such as testing, program management, financial management, production mgt, etc. are actually conducted in the AF."

"In the organizational behavior classes emphasis needs to be placed on communications skills. A special course should be presented on how to deal with and manage engineers and how to get them to talk to their counterparts at the AFPRO, SPO or at the Contractor. Learning to read and understand contracts is very important. Knowing the Federal Budget process is important in any job. I believe that marketing courses should be offered to give the student some idea of this phase of the contractor's business. . . ."

"Military case studies based on actual field examples."

"More Logistics. More on 800-3. More on FMS. More on contracts. More on Contractor/AF relations. More on long range planning. Less on short time/term 'looking good'. More on thesis that are real life AF problems vice academic nice to know. More on case studies."

"Project Mgt - how to plan for and keep a high tech project on track. History of Technology - How innovations take place and what conditions foster their acceptance. Additional courses of Procurement/Contract Admin. Mgt of Large and Complex Organizations - Managing a 1,000 man lab, a 55,000 man command or the whole Air Force is not the same as running a small company. Electives on cybernetics may help here. Strategic Planning - How to put together an investment strategy."

"I believe that the course could have better practical applications of cost estimation and management information systems, and more depth on defense contractors financial management systems and government contracting."

"Automated Management Information Systems."

"The program could benefit immensely if some actual SPO individuals could come to lecture on current problems in their respective SPO."

"Program of guest lecturers from government and industry discussing management aspects. Short course to compare and contrast current management concepts to traditional military leadership and management problems associated with the primary military mission."

"Some kind of marketing principles course geared to the Federal Sector (1) relating to program advocacy - 'selling your program', (2) to understand how defense contractors do government marketing. An increased emphasis on weapons system procurement. A course in long range strategic business planning."

"Use of visual aids to present simplified information and decision briefings to decision makers who do not have extensive engineering/technical experience or education."

"More Systems Management - i.e. SPO operation and the acquisition cycle."

"Areas which I found most useful: contract mgt, financial mgt, oral presentations, SPO organizational structure."

"Procurement processes/documentation. Configuration Control/ Mgt."

"I strongly urge AFIT to include a MARKETING management course as part of the core curriculum for GSM."

"Much heavier emphasis on the AIR FORCE Systems Management methodology. Try breaking down a 'Super-SPO' by function and teach GSM students what each one must do to synergistically support the whole. Then base theory around practice."

"principles of Computer Software Management (Development). Shopping Lists of Places to go to get practical help in various areas."

"Project management stressing the following: software development/integration, computer systems acquisition. Basic ADP systems theory. Project Management Documentation - functional rqmts definition (especially ADP)."

"We needed more information about weapon systems procurement and management as it applies to the Air Force, and it needed to be more current."

"An in-depth course in Government contracting theory and practices would be invaluable. Oral presentations should be required often."

"The course needs to stay quantitative and practical. It needs more instructors with real SPO experience. I highly recommend deletion of a thesis requirement, with work being done on practical applications instead. A better method is to have the instructor working on a real project with a SPO, and the students contribute to that effort."

"I feel the course (GSM) should be abolished and the available slots at DSMC increased. DSMC does what AFIT does not - i.e. teach the necessary skills to accomplish the demanding job of program management."

"Systems Engineering (design methodologies, trade studies, development implications, reports and analysis of reports). Computer Science (software engineering, software life cycle, language selection and systems design, estimating performance, software decomposition and information hiding). Testing (development testing, functional testing, FOT&E, IOT&E, etc., test management). Upgrading of ongoing imbeded systems (satellite command and control, ground based systems, space defense systems . . .)."

"More emphasis on procurement/acquisition. More situational training sessions - role playing."

"A course dealing with both the theoretical and practical aspects of technical arbitration would be useful."

"Perhaps it (CSCS/C) could be incorporated into the GSM program and students be 'validated' in CSCSC while at the school."

"Some additional instruction would have been useful in the areas of: configuration management and AFLC Policies/ Procedures."

"More attention to the PPBS cycle; POM, BES submissions; Air Force contracting practices; computer applications; acquisition."

"Greater emphasis on C/SSR limitations, legal constraints, analysis, and usage (from a practical point of view). Greater emphasis on government/industrial relationships, contracting methods/procedures, etc. Emphasis on ethical concern in government/industry interfaces."

"The program needs to have more practical application which includes 'experienced' instructors that have worked in a program office."

"Keep away from mechanical details and heavy concentration on the nuts & bolts (e.g. computers, production theory, econ theory, statistics, probability theory, etc) -- instead, treat lightly and give more emphasis to the real world of (1) organizational behavior (2) Human Behavior (3) PPBS (4) Basic characteristics of AF weapon systems programs - including Logistics planning (5) good dose of how commercial firms operate. - see ICAF curriculum."

"Concepts of Corporate (Strategic) Planning - long range effectiveness criteria for organizations vs. short-range efficiency criteria. Concepts and examples of business strategy."

"USAF program manager and contractor interface: authorities and responsibilities."

"While at ESD, I worked extensively with MITRE, Sandia Labs, etc. Some time should be given to examining jow they operate, their charter, their obligations, management, contracting, etc."

"A course to follow in detail the life-cycle of a development of a system from concept to PMRT. More emphasis on the behavioral science courses on working with civilians (GS-12+). Inclusion of configuration control and ECP

process blocks in a course."

"Analysis of contractor propsals, statements of work, and cost data."

"Contracting. Logistics."

"Although AF people do not use Finance or Marketing, these courses should be introduced. We do work with civilian contractors who are interested in these areas, and we (AF) should be aware of the problems of our contractors."

"Greater coverage of Acquisition Policy (elective covering DAR; thorough understanding of all steps involved in SON, Requirements (RFP) pkg, contractor responses, SPO responsibilities, PCO responsibilities, etc.; complete road map of what is required to acquire a system from Acq. Plans, Business Strategy, D&F, etc.)."

"Most program managers going into ASD, ESD, SAMAO, need a course in cost estimation techniques."

"SPO Mgt - executive level summary of SYS 228."

"Program Management Case Studies -- B1/F-15/F-5."

"There should be a course on marketing. Program Managers need to be aware of the techniques used by the businesses they have daily contact with."

"More study in the budgetary process, from congress to MAJCOM. Include the various 'types' (3600 etc) of money. Also contractual procedure to include contract type, contract change procedures."

"Stress Management. Source Selection Procedures. Work Breakdown Structures. Configuration/Data Management. System Safety. Functional Specialties (human factors engineering, test (DT&E, IOT&E, OT&E, FOT&E), program control)."

"Need to cover PPBS from MAJCOM viewpoint."

"Impacts of technology on production capabilities. Configuration Management. Systems Program Office structures and politics."

"Program Control/Financial Mgt (Air Force System)."

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